Adulteration

Introduction

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- An adulteration means a process of addition of impure, cheap and filthy substances to genuine drug in order to get more profits and may not have pharmacological or therapeutic properties

Definition

- Mixing, substituting, or contaminating genuine drugs with inferior, spurious, or harmful substances, reducing quality and therapeutic value.
  - Can be **intentional** (profit-driven) or **unintentional** (poor storage/handling)

Adulteration

Adulteration it is a practice of substituting the original crude drug partially or fully with other substances which is either free from or inferior in therapeutic and chemical properties or addition of low grade or spoiled drugs or entirely different drug similar to that of original drug substituted with an intention of enhancement of profits.

Types of Adulteration

Substitution with similar apperance –	• papaya seeds in black pepper.
Replacement with substandard drug	Thiktha wel for Veniwel
Exhausted drugs –	• clove/ginger after oil extraction.
Foreign matter –	• sand, stones, stems.
Powder adulteration –	• brick powder in chili powder.
Artificial substances –	• synthetic wax imitating beeswax.
Spoiled adulterants –	• mold growth due to poor storage.
Deliberate coloring/adding harmful substances –	• turmeric with toxic lead chromate.

Unintentional adulteration

- Misidentification
- Admixture
- Similar vernacular names
- Similar morphology
- Poor harvesting
- Poor storage
- insufficient botanical knowledge

Replacement with substandard drug

Natural substandard condition, - natural constituents is lower to the minimum standard for that particular drug.

Adulterants resembles the original crude drug morphologically, chemically, therapeutically but are substandard in nature and cheaper in cost.“

Examples:

- Strychnos nux-vomica adulterated with Strychnos potatorum,
- Indian senna adulterated with Arabian-senna,
- Zingiber officinalis adulterated with Japanese ginger,
- Solanum xanthocarpum adulterated with Solanum mammosum.

Intentional reduction of quality; Exhausted drugs

*Deliberate extraction of the constituents & the sale of the residue as the original drugs.

*Refer to any impairment of the quality or value of a drug due to destruction or abstraction of valuable constituents by some physical processes.

*Same drug is admixed but that drug is devoid of medicinally activesubstance as it has been already extracted.

'Mainly volatile oil containing drugs like Fennel, Clove, and Coriander are adulterated by this method.*

Admixture

Refers to addition of one article to another through accident, ignorance or carelessness.

A part of same plant which is devoid of therapeutic action is mixed.

- Eg: Stem portions are mixed along with leaf in drugs like -Bala; Dhattura;
- Inclusion of soil and stone pieces in gugul;
- plant root with adhering soil and other plants;
- Clove is mixed along with leaves and petioles.

Artificially Manufactured Substances

The drug is adulterated with substance which has been prepared artificially.

Examples:

- Properly cut, shaved Basswood - For nutmeg;
- Yellow coloured paraffin wax for Bees wax.

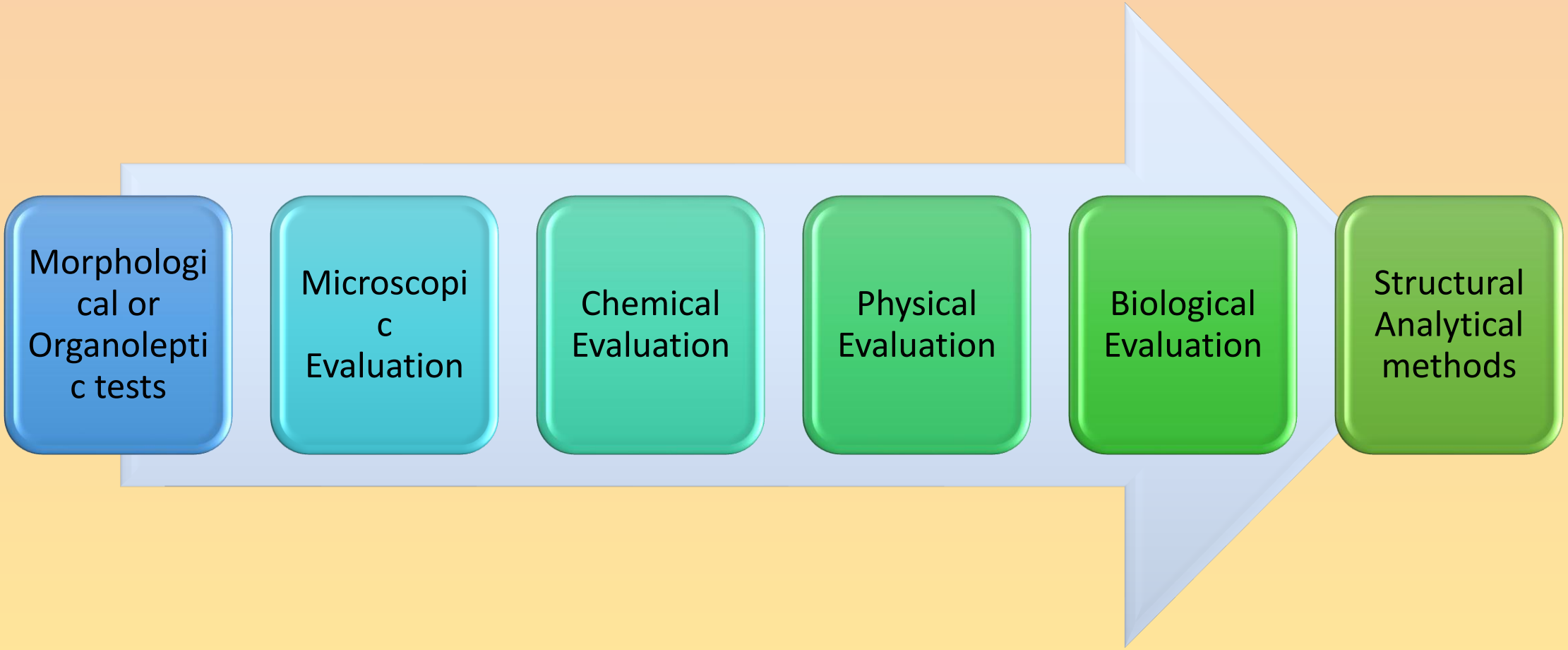
Synthetic chemicals are used to enhance natural character.

Eg: Citral is added to citrus oils (like oil of lemon and oil of orange).

DISADVANTAGES OF ADULTRATION

- causes denaturation & degradation of product;
- may completely destroy the active constituents;
- May cause artificial scarcity of drug;
- That leads to damage of dosage form;
- leads to altering of drug nature;
- may cause damage/side effects to patient or death
- They lead to increase price of product

Evaluating methods of Adulteration



Thank You!